

Section 6.2- Tests of significance

EXPERIMENT:

claim:	RED	BLUE
$p_{\text{RED}} = 0.25$	1	<div> </div> <div> </div> <div> </div>
$n = 20$		
$\hat{p} = 0.05$		
$\hat{p} = 0.30$	$p = 0.25$	4 R
$\hat{p} = 0.35$	$p = 0.25$	16 B
$\hat{p} = 0.39$		<hr/>
$\hat{p} = 0.43$		20

6.2

- ① to assess the evidence
for/against a claim sample
- ② sample to claim
- ③ probb. of getting our sample
if claim is true

① Hypotheses (claim & alternative)
 $p = 0.60$
 $p < 0.60$

② Test Statistic (standardizing)
Z-scores

③ P-value (prob)

④ Conclusion
(2 sentences)

Ex: ① Hypotheses

$$H_0: \mu = 90$$

$$H_a: \mu < 90$$

$$\mu = 90$$

$$\sigma = 2.2$$

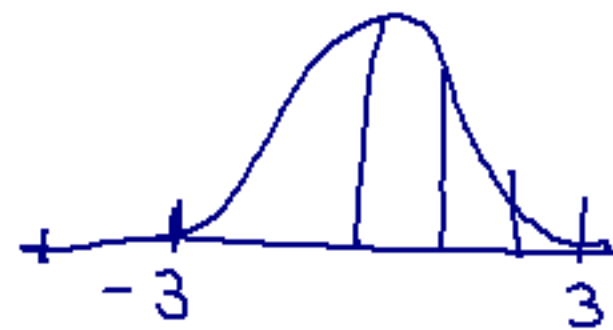
$$n = 10$$

$$\bar{X} = 86.2$$

$$\alpha = 0.05$$

↑ alpha

② Test Statistic



$$Z = \frac{\bar{X} - \mu}{\sigma / \sqrt{n}} = \frac{86.2 - 90}{2.2 / \sqrt{10}} = -5.462$$

③ P-value

$$P(Z < -5.462) = 2.3596 \times 10^{-8}$$

④ - We reject H_0 b/c $p\text{-value} < \alpha = 0.05$.

- We sufficient evidence
that the avg. pitch speed
is less than 90 mph.

$$\alpha = 0.05 = 5\%$$

4%

6%

~~$H_0: \mu = 90$~~

$H_a: \mu < 90$

p